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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/505,334
Filing Date: August 23, 2004
Appellant(s): ICHIKAWA ET AL.

James A. Oliff

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/05/2007 and 12/21/2007 appealing from the Office action mailed 09/12/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6.331,075	Amer et al.	12/18/2001
5,693,685	Kishimoto et al.	12/02/1997

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 13, 16-18, 22, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kishimoto et al. (U.S. 5693685) [hereinafter Kishimoto] in view of Amer.

Kishimoto teaches a honeycomb structure/ device as shown in Fig. 1. Kishimoto teaches that its thermal conductivity was (needs to be) determined (col. 13, lines 9-15). Kishimoto teaches that sides of the honeycomb structure are covered with a heat-insulating material (container) 1.

Kishimoto does not teach the particular method for determining thermal conductivity.

Amer teaches the device/ method stated above. Amer teaches to measure heat conductivity of a homogenous or inhomogenous (porous) specimen/ sample (stacked films, different thicknesses), as shown in Figs. 1, 3, in transient or steady state modes. The specimen is connected to two heat conductive (high thermal conductivity) slabs (contact members) at its two ends; the slabs are instrumented with thermocouples. In the steady state mode, the two slabs are, inherently, kept at given different temperatures. The thermal conductivity of the specimen (thin film) is calculated by using formulas in cols. 3-5 derived from a Fourier transform. Amer teaches to apply a contact pressure between the slabs and the specimen. Since there is a heater positioned next to one slabs and not to another, it is inherent, that in a steady state mode, one slab is at a temperature different from another slab temperature.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply a method taught by Amer, to measure a thermal conductivity of a structure of Kishimoto, so as to provide the honeycomb structure with a conduction path through the honeycomb structure, as very well known in the art, and thus, obtaining data how the structure conducts heat.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the device having two contact members covered with a film of thermally conductive grease/ paste, so as to improve their thermal conductivity, and thus, provide a better heat sinking effect and enhance a heat flow, in order to obtain more accurate results of measurements, by making fast heating and not allowing the heat to be lost into the atmosphere.

<u>With respect to claim 22</u>: the particular contact pressure, i.e., 1 to 10 kg/ cm2, as stated in claim 22, absent any criticality, is only considered to be the "optimum" pressure that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the particular geometry of a sample and the desired accuracy of the measurements, etc. <u>See in re Boesch, 205 USPQ 215 (CCPA 1980).</u>

<u>With respect to claim 24</u>: the particular thermal conductivity of the honeycomb structure, i.e., 1W/ mK or more, as stated in claim 24, absent any criticality, is only considered to be the "optimum" thermal conductivity that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine

experimentation based, among other things, on the intended use of the device/ honeycomb structure, etc. See in re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to claims 16-17: using the particular material, i.e., material of a high flexibility, used for the highly conductive member, as stated in claims 16-17, absent any criticality, is only considered to be the “optimum” material that a person having ordinary skill in the art at the time the invention was made would have been able to determine using routine experimentation based, among other things, on the intended use of the device/ honeycomb structure, its porosity and thickness, so as not to damage the honeycomb structure during the test by using flexible contacts under pressure, etc. See in re Boesch, 205 USPQ 215 (CCPA 1980).

The method steps will be met during the normal operation of the device stated above.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kishimoto and Amer, as applied to claims 13, 16-18, 22, 24 above, and further in view of Kirino et al. (U.S. 6730421) [hereinafter Kirino].

Kishimoto and Amer disclose a device as stated above.

They do not teach the particular material to make the honeycomb structure.

With respect to claim 25: see, for example, Kirino et al. (U.S. 6730421) who teach that a honeycomb structure can be made of silicon nitride.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the structure, disclosed by Kishimoto and Amer, of silicon nitride, as taught by Kirino, so as to allow the operator to test a thermally conductive honeycomb structure made of silicon nitride material because this material has its own thermal conductivity which is an important factor when a honeycomb structure is being used as, for example, a thermal interface device, in order to know the thermal conductivity of the interface device or heat sink device, and thus, to prevent an

object of interest from overheating, by using a known material on the basis of its suitability for the intended use of the invention.
The method steps will be met during the normal operation of the device stated above.

(10) Response to Argument

Applicant states that Amer teaches a method of measuring thermal conductivity of a thin film. Applicant states that Amer limited to a solid film structure.
Kishimoto teaches thermal insulator of foamed plastic, as opposed to the instant invention, and thus, they are not directed to a honeycomb structure.
This argument is not persuasive because, according to Webster, 10th edition, page 556, a honeycomb structure is broadly defined as is a cellular structure, and Kishimoto teaches a cellular structure (Fig. 1), and Amer states that the structure of interest could be inhomogeneous (heterogenous, col. 3, line 9), and thus, in a broad sense, somewhat cellular. (Amer determines thermal conductivity of a film structure, Amer does specify the density of the film structure (i.e., porous, foamed, etc., and thus, honeycomb-like structure). However, Amer addresses to a problem of stacks of the films, thus, in a broad sense, determining thermal conductivity of non-homogenous (varied density) stack of films, which, in a broad sense, could be considered as a cellular/ porous (<u>honeycomb)</u> structure. Kishimoto discloses a porous (<u>foam cell/ honeycomb</u>) insulation (i.e., foamed polyurethane) sample whose thermal conductivity needs to be known and thus, determined. Kishimoto does not rule out any shape or density of the structure. In fact, according to Fig. 1, the sample looks like a layer having a thickness, in a broad sense; it could be considered a porous film).

Furthermore, please note, that in the rejection on the merits, the examiner considered that any porous structure, in a broadest reasonable interpretation, could be considered a honeycomb structure.

In addition, this argument is not persuasive because in the claims, the Applicant does not describe/ define a honeycomb structure as having a shape/ size different from the structure of Kishimoto or Amer.

Applicant states that the Office Action did not address covering the exposed honeycomb sides with an insulation material. This argument is not persuasive because, according to Kishimoto, the sides (exposed sides) are already covered with insulation.

Applicant states that the structure of the combination of the references would be unable to remove particulate, that the honeycomb structure of the instant invention is larger that the structure of the combined references, that the method of Amer requires low pressure that claim 18 is directed to measurement of thermal conductivity of the whole honeycomb structure. These arguments are not persuasive because these limitations are not stated in the claims. It is the claims that define the claimed invention, and it is claims, not specification that are anticipated or unpatentable. Constant v. Advanced Micro-Devices, Inc., 7 USPQ2d 1064.

Applicant states that Kishimoto does not teach a method of thermal conductivity. This argument is not persuasive because Kishimoto suggests the need of measuring thermal conductivity of the structure. Amer suggests a method of measuring of thermal conductivity of a structure similar to the structure of Kishimoto. Therefore, the combination of references teaches the claimed invention.

Applicant states that the Examiner does not have motivation to combine the applied references.

In response to Applicant's argument that there is no suggestion to combine references, the examiner recognizes that there should be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. In re Nomiya, 184 USPQ 607 (CCPA 1975). However, there is no requirement that a motivation to make the modification be expressly articuated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one od ordinary skill in the art. In re McLaughlin, 170 USPQ 209 (CCPA 1971. The references are evaluated by what they suggest to one versed in the art, rather than by their specific disclosures. In re Bozek, 163 USPQ 545 (CCPA) 1969.

In this case, KIshimoto discloses a porous/ cellular/ honeycomb structure and states that its thermal conductivity should be measured; Amer suggests the method of measuring thermal conductivity. Applicant does not claim any particular features neither of the structures nor of the method which could have made the Applicant's invention different from the device/ method of the applied combination.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Gail Verbitsky

/Gail Verbitsky/

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